-- Introduction --
ACEAS Molecules in Models

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Background

- Primarily working in landscape ecology and conservation biology.
- Focus has been on tool development – spatially explicit and individual based models.
- Current areas of interest include PVA, landscape genetics, disease dynamics, connectivity and source-sink dynamics, stressor interactions…

Model Development and/or Viability Analyses

- Northern spotted owl (including barred owl)
- Desert tortoise
- Ord's Kangaroo rat
- Kit fox (focus on stressor interactions / pesticides)
- Pileated woodpecker
- Black-capped vireo (including cowbirds)
- Sage grouse
- Wolves, Fisher, Marten, and other carnivore species
- Mountain yellow-legged frog (including chytrid fungus)
- Tule Elk (focus on reintroduction experiments)
- And more…

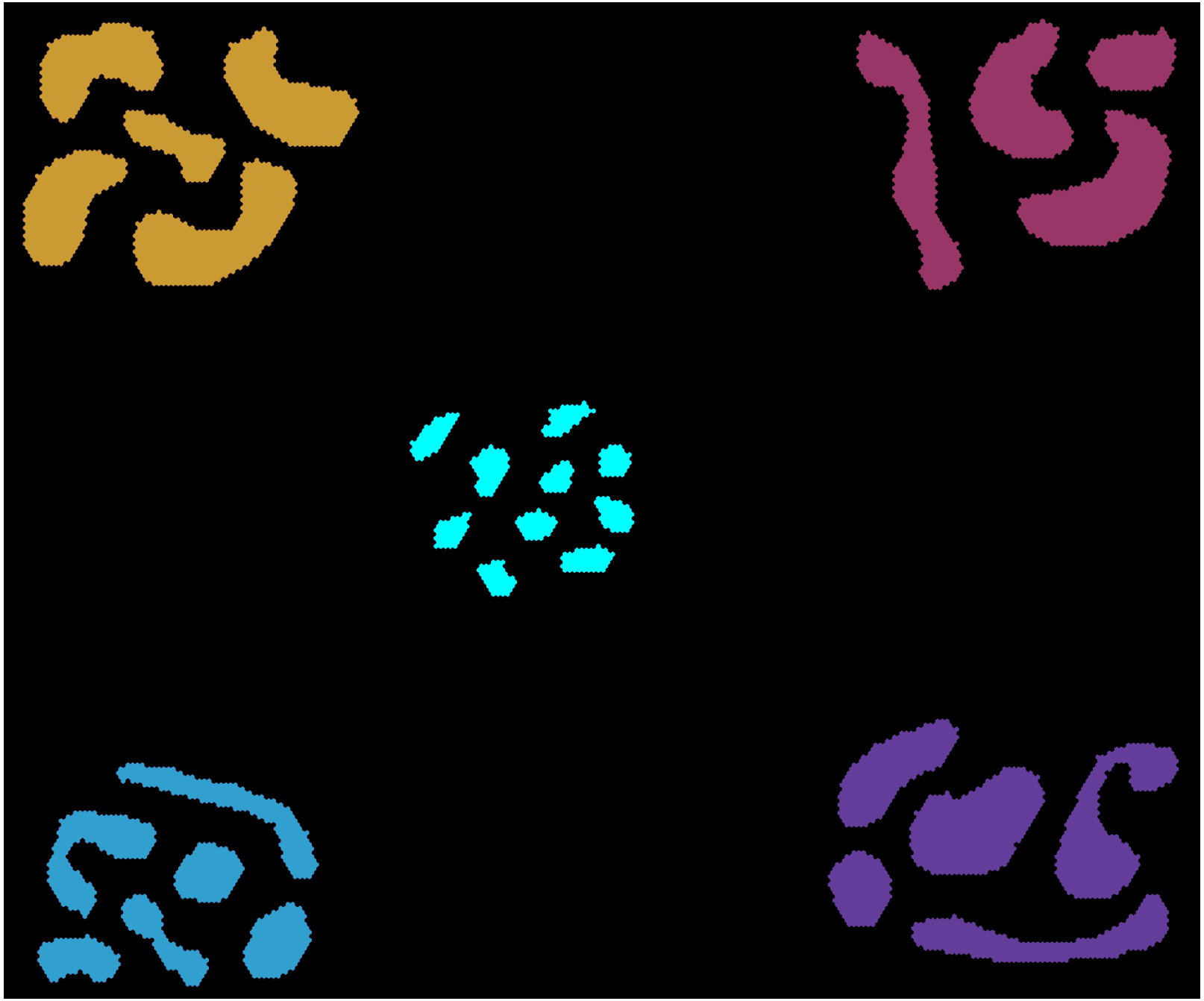
Some Current Activities

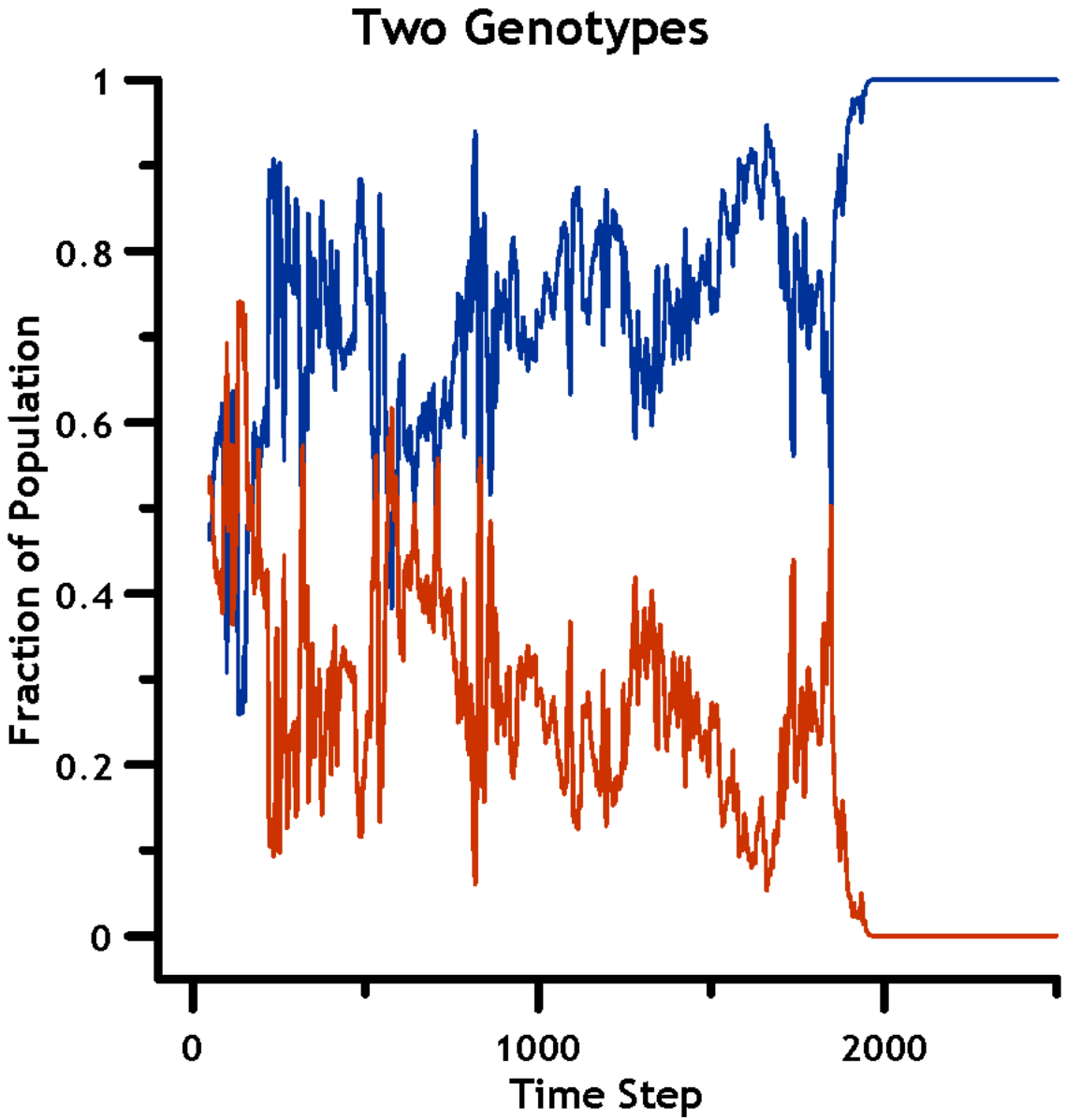
- Spotted owl recovery planning
- ESA symposium
- SERDP source-sink connectivity project
- Lacy / Akçakaya NSF project
- Cytrid research
- Pesticide impacts on population viability
- Spread of zoonotic diseases

PVA and Landscape Genetics

My modeling platform makes it possible to:

- Include more realism (landscape structure, life histories, disturbance regimes, etc.) than you'd find in other models.
- Evaluate the impacts of multiple interacting stressors including land management, climate change, invasions, disease spread, etc.
- Provide mechanistic and ecologically relevant ways to Incorporate resistance and connectivity into landscape genetics models.
- Account for the richness of landscape structure and individual interactions (contrast with graph theoretic models).
- Develop complex feedback mechanisms using multiple adaptive loci in conjunction with other life history traits (e.g. link exposure to mutation rates, stress and genetic fitness to competitive ability…)




Two Genotypes
Fraction of Population
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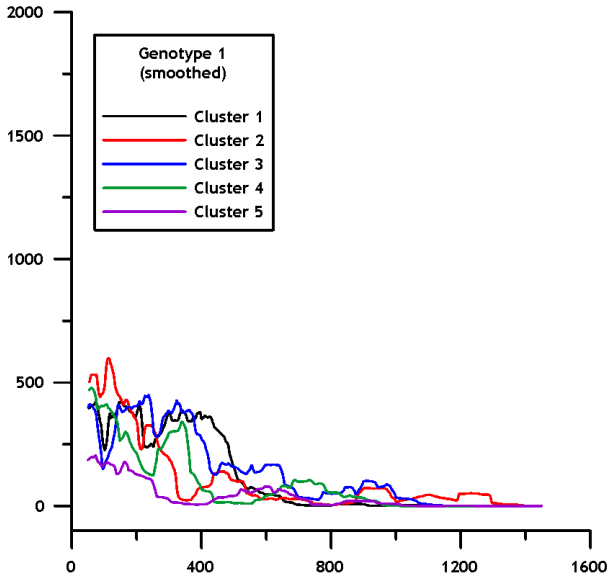
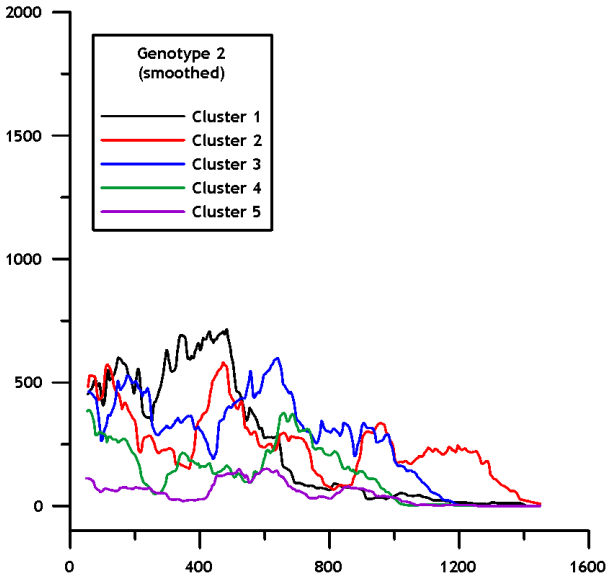
0.8
0.6
0.4
0.2
0
0
1000
2000
Time Step


Genotype 1
(smoothed)
Cluster 1
Cluster 2
Cluster 3
Cluster 4
Cluster 5
2000
1500
1000
500
0
0
400
800
1200
1600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(smoothed)
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Cluster 2
Cluster 3
Cluster 4
Cluster 5
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1500
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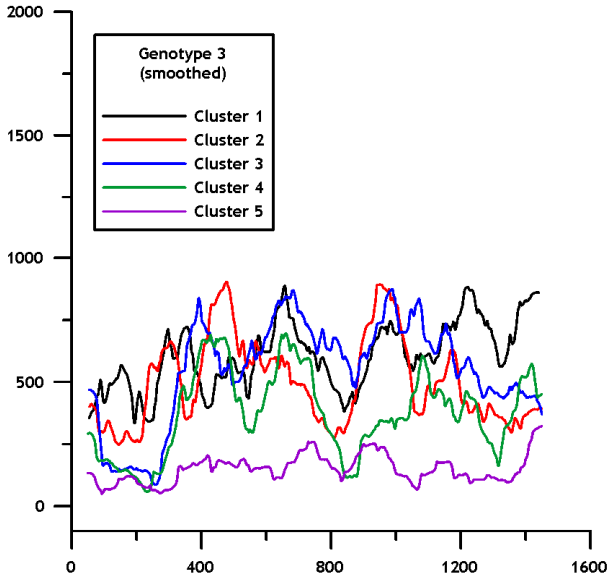
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Cluster 4
Cluster 5
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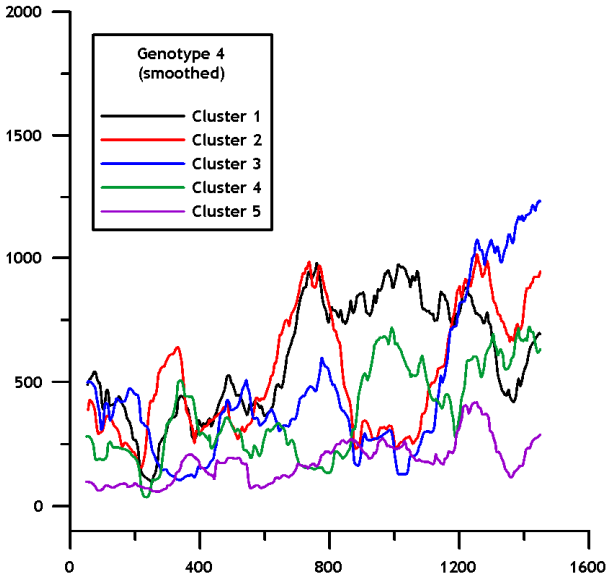
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(smoothed)
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Cluster 4
Cluster 5
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